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Abdominal Trauma, the Gallbladder is not Spared: A Case Report

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Abstract **Case Report**

Gallbladder injuries in closed abdominal trauma are rare and difficult to diagnose. They present with vague symptoms, generally associated with inconclusive investigation results; therefore, they are often diagnosed at laparotomy. The patient usually presents with vague abdominal pain and sometimes a period of remission depending on the type of gallbladder injury. Any delay in diagnosis and definitive treatment will worsen the prognosis. Diagnosis requires astute clinical acumen and radiological interpretation. The Losanoff classification system has the merit of guiding treatment. Although cholecystectomy is the preferred treatment, there are cases where the gallbladder may be left in situ.

Keywords: Gallbladder, Wounds and Injuries, Non-Penetrating Wound, Peritonitis, Cholecystectomy.

INTRODUCTION

Gallbladder injury after closed abdominal trauma is rare. Gallbladder injuries are estimated to account for between 1.9% and 2.1% of all abdominal trauma [1, 2]. Isolated contusion of the gallbladder is exceptional due to its anatomical location. The liver, intestines, omentum and ribs relatively protect it. Its clinical presentation is often insidious. Doctors can have difficulty diagnosing them and choosing the most appropriate treatment when there is no consensus on the best course of action, which is why the diagnosis is often late and causes morbidity and high mortality. Early diagnosis is therefore essential but remains a challenge because traumatic injuries to the gallbladder are unusual.

We report a case of acute traumatic cholecystitis discovered in a patient who was the victim of abdominal trauma due to aggression.

OBSERVATION

Mr Badre. E. M, 29 years old, with no known medical or surgical history, consulted the emergency room for acute abdominal pain starting from the right hypochondrium of progressive intensity for 3 days radiating towards the back, then becoming generalized and associated with vomiting and a stopping of materials and gases, all evolving in a context of conservation of the general state.

During the interrogation, Mr Badre described an abdominal trauma three days ago by direct shock, which caused pain in the right hypochondrium, which motivated the patient to consult his attending physician who put him on analgesic treatment. The worsening of the pain and the appearance of vomiting motivated the patient to consult his treating physician again who decided to refer him for further treatment.

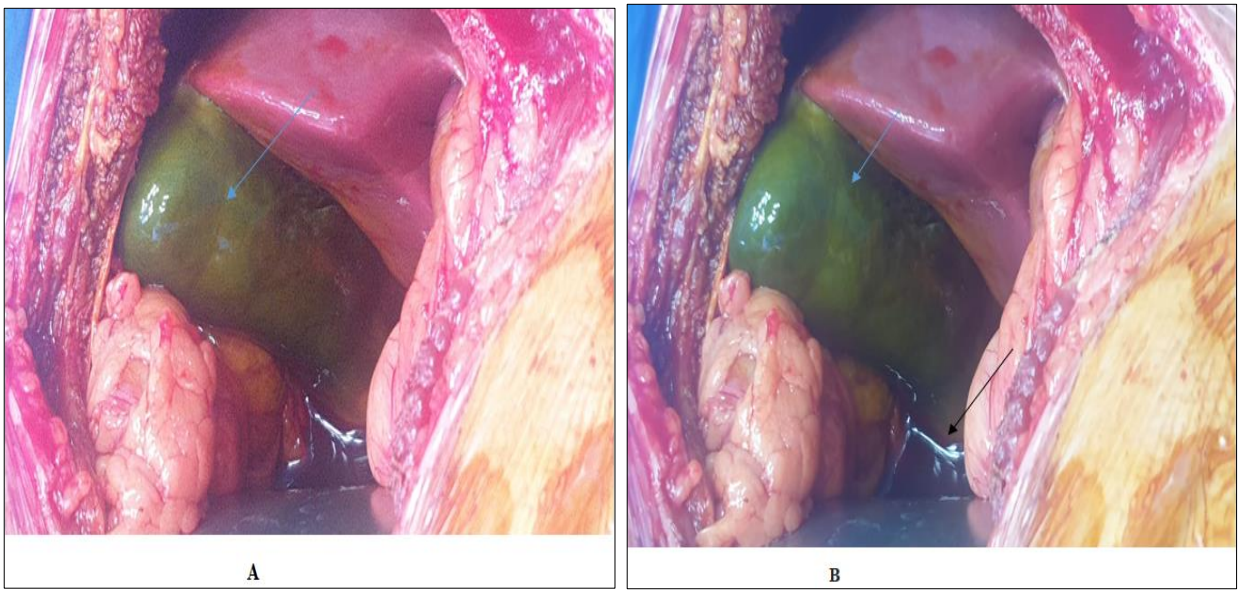
The clinical examination found a patient hemodynamically and respiratory stable, presenting a non-distended abdomen, without scar, diffuse abdominal tenderness on palpation with defense localized at the level of the right hypochondrium.

A biological assessment was carried out, showing hyperleukocytosis with a neutrophil predominance, GB/13,000 CRP/103, mild cholestasis, BT/15 BD/6, without cytolysis.

An abdominal CT angiogram was performed urgently and showed acute post-traumatic cholecystitis,

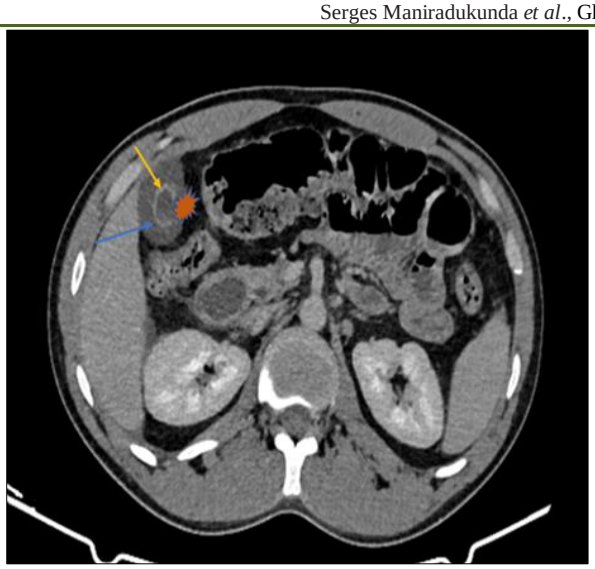
the site of a defect in the mucosa at the bottom of the gallbladder, a small amount of intraperitoneal effusion and a simple fracture line of the posterior arch from the 10th left side.

Given the results of the patient's clinical examination and the CT scan, the patient was sent to the operating room. After the exploration of the abdominal cavity which found 1 liter of bile, the wall of the gallbladder infiltrated by the bile shows a partial defect at the level of its left lateral wall, the rest of the exploration being without particularity, A cholecystectomy was performed followed by washing and drainage. The patient was discharged from the hospital after 4 days.

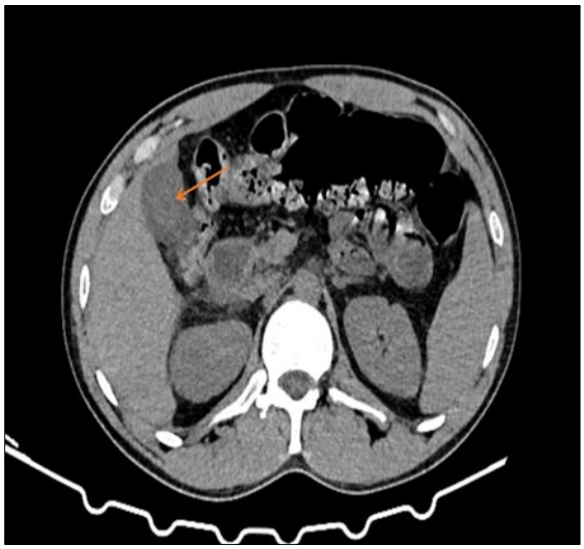


A and B: Bilious infiltration of the walls of the gallbladder (blue arrow) with bilious effusion sub hepatic (black arrow)

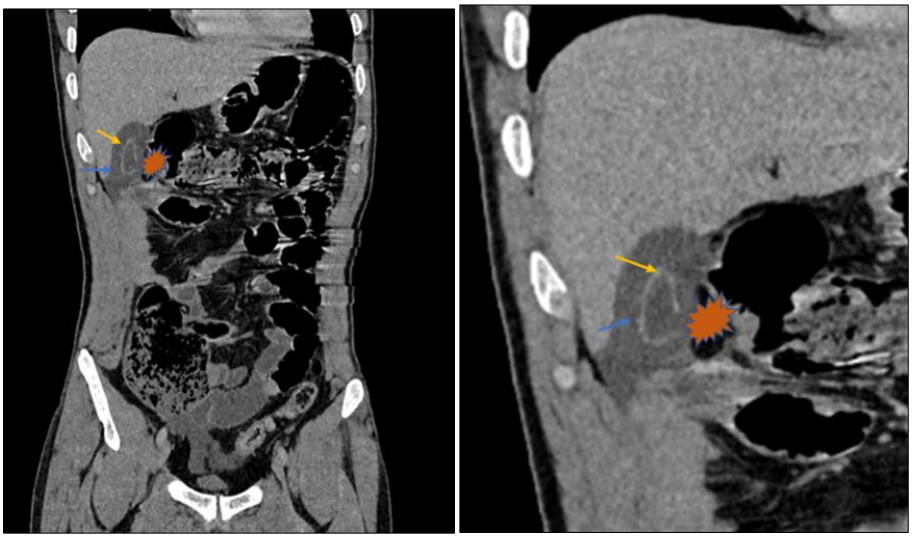
C: Partial defect of the gallbladder wall, (black arrow)



D: Spontaneously dense appearance of the mucosal enhancement (orange arrow)



E: Vesicular parietal thickening with: gallbladder (orange arrow)



F and G: Vesicular parietal thickening with: Mucosal enhancement (orange arrow), Submucosal oedema (blue arrow) Mucosal clearing of the vesicular fundus (orange symbol)

DISCUSSION

Isolated contusions of the gallbladder are rare pathologies, 1/10,000 of patients explored for abdominal trauma [3]. The frustrating symptomatology of these bruises delays the diagnosis. This is done when complications arise, often several days after the trauma.

Gallbladder injuries are rare and usually occur in association with other intra-abdominal injuries [4]. Risk factors are conditions that lead to an increase in the volume of the gallbladder without thickening of its walls, such as fasting, alcohol consumption and the absence of chronic gallbladder disease [1]. In this case, the patient was fasting.

Rupture of the gallbladder is the most common lesion and can be classified according to its cause, according to the Estêvão-Costa classification, (table 1) [1-5], or according to the morphology of the lesion, according to to the classification of Losanoff and Kjossev (table 2) [1-6]. The case described above consisted of a type II and 5 lesion, respectively.

The classification of different types of traumatic lesions of the gallbladder has been proposed, respectively classifying our case as post-traumatic acute alithiatic cholecystitis (II and 4b) [5, 6] with bile leakage through the other intact layers. Contusion of the gallbladder is probably the most common type of injury but due to the spontaneous healing of small contusions, the incidence is underestimated [3].

The CT scan is the reference imaging with good specificity showing a spontaneously hyperdense structure not enhanced after injection of the contrast product.

Table 1: Estevão-Costa Classification of Gallbladder Lesions [5]

Type	Description
I : spontaneous	Idiopathic
	Secondary - Lithiasis -Inflammation/infection (predisposing factors: diabetes, atherosclerosis, malignancy, pregnancy) - Other (congenital obstruction, Salmonella typhi, anticoagulants, etc.)
II : Trauma	Penetrating
	Blunt
III : Iatrogenic	

Table 2: C**lassification of Different Types of Traumatic Gallbladder Injuries [6].**

Type	Sub type	Description	Proposed treatment
1	1a	Contusion with intramural hematoma	Conservative/cholecystectomy
	1b	Contusion with intramural hematoma with necrosis and perforation	Cholecystectomy
2	2	Immediate wall rupture at the level of the injury	Cholecystectomy
3	3a	Partial avulsion	Conservative/cholecystopexy/cholecystectomy
	3b	Complete avulsion with intact hepatoduodenal ligament	Cholecystectomy
	3c	Detached hepatoduodenal ligament with intact bed	Cholecystectomy
	3d	Total avulsion/Traumatic cholecystectomy	Hemostasis clip/cyta channel
4	4a	Traumatic cholecystitis	Cholecystectomy + evacuation of hemobilia
	4b	Alithiasic cholecystitis complicating trauma	Conservative/cholecystectomy
5	5	Tearing of the mucosa with leakage of bile trough the other layers, gallbladder wall intact	Cholecystorrhaphy/cholecystectomy

In case of isolation, the diagnosis may be delayed due to the absence or delay in the onset of symptoms, with the possibility of delayed peritonitis caused by the presence of bile in the peritoneal cavity [7, 8]. Other possible presentations depend on the type of injury, such as massive hepatic bed bleeding after gallbladder avulsion; acute cholecystitis may occur due to hematoma of the gallbladder wall or cystic or common bile duct obstructions caused by blood tissue; jaundice may occur once bile pigments from a bile leak begin to be reabsorbed by the peritoneum.

Abdominal ultrasound may be helpful. It can suggest a lesion by identifying the mobility of the gallbladder (after avulsion of the hepatic bed), the presence of hyperechoic material inside the gallbladder (which may correspond to blood tissue), a thickening of the wall of the gallbladder (in case of hematoma) and pericholecystic fluid (from bile or a blood sample).

In addition to these signs, CT scans may also show regular thickening of the gallbladder wall, perivesicular infiltration, extravasation of contrast

medium in the case of damage to the cystic artery and free fluid [9-11]. A diagnostic peritoneal aspiration containing bile may also arouse.

We understand, however, that these options should be reserved for cases where other injuries require more urgent treatment, and that valuable time must be saved if damage control measures are necessary. In other circumstances, any gallbladder injury should be treated with formal cholecystectomy (via open surgery or laparoscopy), since this is a relatively simple procedure and other types of management are at potential risk of failure, leading to further complications, morbidity, and the need for reoperation. However, in cases of technical difficulty, subtotal cholecystectomy is also acceptable and safe [7-11].

Once cholecystectomy is performed, drainage must be adapted according to the presence of other lesions, without the need for drainage when an isolated lesion of the gallbladder is the only lesion, except in cases of subtotal cholecystectomy. In these cases, abdominal drainage is recommended due to the risk of bile leak.

Intraoperative cholangiography through the cystic duct is recommended if damage (extravasation or obstruction) of the common bile duct is suspected in order to increase the chances of a correct diagnosis and, therefore, to allow the most appropriate management [12].

In the present case, after taking into account the results of the CT scan and laparotomy, it was decided to proceed with a simple cholecystectomy with washing and drainage; cholangiography was not performed due to unavailability of digital radiography mobile.

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Declaration of Competing Interests: The authors declare that they have no conflict of interest.

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